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CMFRI Newsletter

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Dr. Sanjeev Kumar Balyan, Hon'ble Union Minister of State for Agriculture being welcomed by Dr. A. Gopalakrishnan, Director.
Also seen, Dr. Gurbachan Singh, Chairman, ASRB.

see page 5



हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

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Indian Council of Agricultural Research
CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
P.B. No. 1603, Ernakulam North P.O., Kochi - 682 018, Kerala, India

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DIRECTOR SPEAKS



Warm greetings to all

Marine capture fisheries is an important component of the fisheries sector in India. Marine fish landings in India have historically been estimated using the multi-stage stratified random sampling method developed by CMFRI in 1959. These estimates form an

important input for formulating fisheries management measures and taking policy decisions by planners. The data for 2014 was released during this quarter and indicated that the catches have declined mainly due to reduced landings of the Indian oil sardine. After a record high landing of 7.2 lakh tonnes in 2012 the oil sardine has shown a declining trend. While there is no doubt that recent erratic climatic patterns have contributed to this phenomenon, excessive fishing and large scale capture of juvenile fishes for fish meal preparation and non-edible use is also flagged. In this context CMFRI's initiative for awareness creation through stakeholder workshops have created a positive impact. It is hoped that wide public dissemination of the Annual All India Marine Fish Landings data initiated since last year will help to create greater awareness on the current status of fish stocks as well as the importance of fish catch statistics data. India occupies the second rank in the list of major shark fishing nations in the world and therefore it is essential that the country evolves a policy for the sustainable management of these valuable resources. The release of the publication "Guidance on National Plan of Action for Sharks in India" that draws on the strength of various researches carried out on sharks in the institute is therefore a significant achievement. Fish stock estimation presently relies on the species wise length based assessment of the landings. However, it is desirable for additional validation with fish age data derived from hard parts of the fishes like otoliths, scales or vertebrae. The new, fully fledged Fish Ageing Laboratory set up is hence a welcome step. As usual, during this quarter also, all efforts have been made to supplement marine fish production through mariculture activities at the various Regional and Research centres. I wish all concerned more success in their endeavours at ushering in a Blue Revolution in the country.

A. Gopalakrishnan
Director

About CMFRI

The Central Marine Fisheries Research Institute, Kochi, is a premier research Institute under the Indian Council of Agricultural Research, devoted to research and training in marine fisheries and mariculture.

CMFRI has three Regional Centres viz., Mandapam Camp, Visakhapatnam and Veraval and seven Research Centres located along the Indian coastline, catering to the marine fishery policy needs of all maritime states of the country.



**Asian Fisheries Society (AFS)
ICAR-Central Marine Fisheries Research Institute (CMFRI) &
Asian Fisheries Society Indian Branch (AFSIB)
announce**



5th International Symposium on Cage Aquaculture in Asia CAA5

November 25-28, 2015, Kochi, Kerala, India

CMFRI releases All India Marine Fish Landings 2014 data

In a Press Meet held on 2nd May 2015, Dr. A. Gopalakrishnan, Director, officially released the All India marine fish landings estimate for 2014 collected under the aegis of the Fishery Resources Assessment Division. Heads of Divisions, scientists and press personnel had interactions on the marine capture fisheries scenario and trends.

Data indicated that India's marine fish landings (excluding Lakshadweep and Andaman & Nicobar Islands) reached 3.59 million tonnes (t) in 2014. This indicated a minor decline of 5% compared to the estimated 3.78 million t landed in 2013. Of the 9 maritime states and 2 union territories, Gujarat ranked first with estimated landings (in lakh tonnes) being 7.12 (19.8%) followed by Tamil Nadu with 6.65 (18.5%), Kerala 5.76 (16%), Karnataka 4.74 (13.2%), Maharashtra 3.45 (9.6%), Andhra Pradesh 3.42 (9.5%), Goa 1.53 (4.3%), Odisha 1.39 (3.9%), West

Bengal 0.77 (2.1%), Puducherry 0.65 (1.8%) and Daman & Diu 0.46 (1.3%). Compared to 2013 landings from Karnataka, Andhra Pradesh, Goa and Odisha increased whereas in Gujarat, Tamil Nadu, Kerala, Maharashtra, West Bengal and Daman & Diu it decreased. The marine fish species/groups that mainly contributed the landings in 2014 were oil sardine 5.45 (15.2%), Indian mackerel 2.37 (6.6%), carangids 2.10 (5.9%), ribbonfish 2.09 (5.8%), penaeid prawns 2.06 (5.7%), lesser sardines 2.06 (5.7%), non-penaeid prawns 1.83 (5.1%), cephalopods 1.73 (4.8%) and croakers 1.62 (4.5%) lakh t. Among these, Indian mackerel, penaeid prawns and lesser sardines landings increased by 19, 4 and 29% respectively whereas oil sardine, ribbonfish, carangids, non-penaeid prawns, cephalopods and croakers showed decrease in landings by 9, 17, 15, 14, 9 and 9% respectively when compared to 2013. Oil sardine

remained the largest contributor to the total marine fish landings of India with Kerala being the leading state. For the first time this resource was landed in all the maritime states in significant quantities while the southern states remained the major contributors. The Hilsa shad, highly valued in West Bengal, reduced drastically from 40,000 tonnes in 2013 to 3000 tonnes in 2014.

The value of marine fish landings during 2014 based on the price at landing centre level was ₹ 31,754 crores, registering an increase of 8% over 2013. At the retail level, the estimated value was ₹ 52,363 crores registering an increase of 12% over the year 2013. The average price per kg of fish at landing centre and retail levels showed 14.1 and 18.3% increase respectively. Kerala had the highest realization of prices at the landing and retail centers registering a growth of 18.28 and 19.38% respectively over 2013.



Press release of estimated All India Marine Fish Landings 2014 data by Dr. A. Gopalakrishnan, Director

Fish Ageing Laboratory established at CMFRI Headquarters



Director observes the display of fish otoliths in the Fish Ageing lab

A well-equipped Fish Ageing Laboratory was established at the Institute headquarters with the aim of supporting the marine fisheries research and length frequency based fish stock assessment programmes by age validation using hard parts of fish. Skill development and training in fish ageing using hard parts is another objective of this centre. The facility was inaugurated by Dr. A. Gopalakrishnan, Director, CMFRI, on 30th June 2015 in the presence of Heads of Divisions, scientists and staff of the Institute. Ongoing programmes are ageing of Indian oil sardine (*Sardinella longiceps*), Indian mackerel (*Rastrelliger kanagurta*), Silver pompano (*Trachinotus blochii*) and Mahimahi (*Coryphaena hippurus*) and otolith morphometric studies for species/stock confirmation. Fisheries research aimed at effective management of exploited resources

to maximize and sustain production requires understanding of biology and population dynamics of the component species for assessing level of exploitation and stock health. Precise estimates of age and growth of individual species in the ecosystem is one of the basic requirement in the above process. These information are mostly derived from length composition of the species in the catch, following modal progression analysis. This however has its own limitations because of various biological, ecological and fishery dependent factors and sampling bias involved in the entire process. Hence to validate the age and growth information naturally encoded in the hard parts such as scales, otoliths, opercular bones, spines and vertebrae have been used in several fish species worldwide. Fishes grow



Various equipments in the lab

continuously throughout their life but their rate of growth may vary depending on season, biological factors and diurnal rhythms etc. and will be reflected as bands on hard parts. The bands formed during slow growth phase will be laid close together and appear more darker. During fast growth phase rings will be laid wide apart and therefore appear lighter. An adjacent dark and light band is considered a day's growth.

The lab is equipped with an ultra sonic cleaner for cleaning otoliths prior to sectioning for ageing studies. Blocks are prepared using Silicon Rubber moulding unit. High precision IsoMet low speed saw is used for sectioning. The Ecomet grinding and polishing unit is used for the preparation of otolith sections to be viewed for age rings. The images are acquired by a microscope with inbuilt image analyzing software for age determination as per protocol.

(Reported by Pelagic Fisheries Division)



Reading of rings in processed otoliths using Image Analysis system

Union Minister of State for Agriculture visits CMFRI



Dr. Sanjeev Kumar Balyan, interacts with scientists of ICAR flanked by Dr. Gurbachan Singh, Chairman, ASRB and Dr. A. Gopalakrishnan, Director, CMFRI

Union Minister of State for Agriculture, Dr. Sanjeev Kumar Balyan visited CMFRI, Kochi on 4th June 2015. He had an interactive meeting with scientists of various ICAR Institutes situated in Kochi such as the Central Institute of Fisheries Technology (CIFT), PMFGRC of National Bureau of Fish Genetic Resources (NBFGR) and Central Inland Fisheries Research Institute (CIFRI). Dr. Gurbachan Singh, Chairman, Agricultural Scientists Recruitment Board (ASRB) was also present on the occasion. Dr. R. Narayanakumar, Head, SEETT Division welcomed the dignitaries and apprised about the history, mandate, salient achievements, cadre strength of the institute and various products developed at CMFRI. Dr. Susheela Mathew, CIFT, Dr. V. S. Basheer,



Dr. A. Gopalakrishnan, Director welcomes Hon'ble Minister of State for Agriculture

Principal Scientist and Head, PMFGRC of NBFGR and Dr. Rani Palanisamy, Principal Scientist and SIC, CIFRI Kochi

Centre also made brief presentations of their respective institutes on the occasion.

Dr. Gurbachan Singh, Chairman, ASRB at CMFRI

Dr. Gurbachan Singh, Chairman, ASRB visited the Vizhinjam Research Centre on 2nd June, 2015 and Headquarters on 4th June, 2015. At Headquarters, Dr. Singh presided over the Interaction Meeting of Hon'ble Union Minister of State for Agriculture, Dr. Sanjeev Kumar Balyan with the Scientists of ICAR institutes at Kochi. He also visited the Designated National Marine Fish Repository (DNMFR) at CMFRI, ASRB Online Examination Centre, different laboratories and the Library and Documentation Centre.



Dr. A. Gopalakrishnan, Director welcomes Chairman, ASRB

Stakeholders Meeting held in various maritime states



Stakeholders workshop in progress at HQ

As per the decision taken at the 21st Institute Research Council (IRC) meeting, Stakeholders Meet were organized at various regional and research centres of CMFRI. The results/observations gathered in the in-house research projects on developing Fishery Management Plans (FMP) of the various maritime states were presented before the invited local stakeholders. It facilitated interactions of the scientists / researchers with the fishermen and fish farmers to get feedback on issues pertaining to the marine fisheries sector and research needs.

At Headquarters, the Stakeholder Meet was conducted on April 18th, 2015 under the chairmanship of Dr. A. Gopalakrishnan, Director. The meeting was attended by 45 stakeholders including State Government officials, Shri. A. J. Tharakan, Chairman, Seafood Exporters Association of India, seafood exporters, representatives of fishermen organizations and their leaders from the traditional, motorized and mechanized sectors. In his welcome address, Director emphasized the importance of marine fisheries sector and pointed out that

from 2007 onwards state-wise research projects were initiated to focus on local issues and sustainable development of marine fisheries in each maritime state of India. He highlighted that the aim of the workshop is to present the salient findings of the project to the stakeholders and incorporate their feedback and suggestions if any in the on-going research projects. This being the first such attempt he requested full cooperation from the stakeholders. Following this, a presentation on the present status of the marine fisheries of Kerala was made by Dr. Rekha J. Nair, Principal Investigator of the Kerala FMP project. A presentation on the possible reason for the decline in oil sardine fisheries along Kerala coast was made by Dr. V. Kripa, Head, Fishery Environment Management Division. Another presentation on the present status of the large pelagics in Indian waters was made by Dr. E. M. Abdussamad, Pelagic Fisheries Division. It was followed by a panel discussion headed by the Director and the various Heads of Divisions. The meeting concluded with a vote of thanks by Dr. P. U. Zacharia, Head, Demersal Fisheries Division. He called for concerted effort and unity of fishermen to address the issue of



Stakeholder Meet at Mangalore RC

pollution of water bodies which affect the sustainability of the fishery sector and livelihoods of the fishermen. At Vizhinjam Research Centre Stakeholders Meet was held on 22nd April, 2015. A total of 25 members representing fishermen, fishermen co-operatives, officers from the Fisheries Department such as Fisheries Extension Officer, Assistant Manager and Project Officers from Matsyafed, Thiruvananthapuram participated in the meeting.

A programme "Matsyathozhilali Sangamam", was conducted by Calicut Research Centre on 17th April, 2015 at Fisheries Higher Secondary School, Beypore and on 22nd April, 2015 at Puthiyappa Fisheries Harbour, Kozhikode. The meeting was chaired by Dr. P. K. Asokan, Scientist-in-Charge of Calicut Research Centre. Mr. Dinesh Cheravat, Joint Director of Fisheries, Kozhikode. Mr. M. K. Anil, Secretary, Puthiyappa Araya Samaj and other leaders of the fishermen community were also present.

At Visakhapatnam RC of CMFRI it was held on 18th April, 2015. Nearly 40 participants from various state and central fisheries agencies, fishermen

co-operative societies and NGOs attended the program. Issues highlighted during the discussions included a study on the impacts of coastal pollution on marine biodiversity and fishery health, impact of broodstock collection on wild stock of *Penaeus monodon*, Survey to check for incidental invasion of *Litopenaeus vannamei* into the wild; addressing the potential for artificial reef deployment along selected areas of the coast, plastic pollution in the coastal areas of Visakhapatnam, reduction of by-catch and juvenile catch in trawl nets, prospects of sea ranching and collaborative research with respect to trawl mesh size studies.

At Veraval Regional Centre the Meet was held on 21st April, 2015 in the Conference Hall of the Veraval Industrial Association situated in the Gujarat Industrial Development Corporation (GIDC), Veraval. Nearly 50 participants from the fishermen community comprising leaders of various fishermen associations, fishermen community leaders and Tandels (skippers) from Porbander, Veraval, Mangrol, Vanakbara and Nawabunder, the 5 major coastal districts of Gujarat attended the



Stakeholders Meet at Mumbai RC

programme. Officials from Marine Products Export Development Authority (MPEDA), Export Inspection Agency (EIA), State Department of Fisheries, Junagadh Agricultural University, Seafood Exporters Association and scientists of the Central Institute of Fisheries Technology (CIFT) were also present. Salient research findings were explained to the stakeholders followed by discussions. The problems faced by fishers, their views on current rules and regulations, their willingness to adopt fisheries management and prioritized research needs were discussed in detail. The Stakeholders Meet was organized by Mumbai RC on 17th April, on 18th April at Mangalore RC and 20th March 2015 at Tuticorin RC.

22nd Institute Research Council meeting



22nd IRC in progress at HQ

The 22nd Institute Research Council (IRC) was held from 28th April to 2nd May 2015 at Headquarters. A total of 110 scientists participated in the deliberations. Dr. K. Sunil Mohamed, Secretary, IRC welcomed all participants, including 13 newly recruited scientists to the meeting. The Director and Chairman

of IRC, Dr. A. Gopalakrishnan in his opening remarks highlighted the achievements made by the institute in 2014 - 15. Principal Investigators of 33 institute projects and 32 externally funded projects presented their research findings followed by discussions. Three new projects were presented and approved as sub

projects to be carried out in existing projects. After discussions the IRC also gave approval to changes in technical programmes wherever required. About 50 action points were listed for action to be taken by the concerned scientists/ Division identified before the next IRC.

Oil sardine from Oman enter fish markets of Kerala

The Indian oil sardine *Sardinella longiceps* is a major fishery resource in India and forms the single largest contributor (in volume) to the total marine fish landings of India. After a record high landing of 7.2 lakh tonnes in 2012, all India

catches indicated a declining trend.

In Kerala, which is the leading state for oil sardine landings and where it is a highly preferred table fish, the decline invoked lot of concern among the public. During periods of extreme scarcity of oil sardine comparatively large sized oil sardines were appearing in the fish markets going by the name "Oman sardine" and commanding prices 40 - 60% higher than the locally caught sardines. Subsequent observations indicated that whole frozen oil sardine packed in 10 kg cardboard



Sardinella longiceps from Oman (top) compared to same species caught off Kochi

crates as a product of Oman with a shelf life of one year was entering the market channel through dealers who immediately re-iced and despatched it to local markets. The supply - demand gap being high, these generally big - sized sardines from Oman always fetched a very good price. Identity of the sardine as *Sardinella longiceps* was confirmed using morphometric and DNA barcoding tools.

(Reported by Pelagic Fisheries Division)



Cartons with oil sardine bearing Product of Oman label

Eteline snapper landed at Cochin Fisheries Harbour

An estimated 827 kg of deepwater longtail red snappers *Etelis coruscans* Valenciennes, 1862 was landed at Cochin Fisheries Harbour by a vessel which operated in international waters during March 2015. The fishes were caught using hooks and line. The eteline snappers, which occur in depths of 100 to 400 m are an important fishery resource throughout the tropical Pacific. The fishes landed were in the size range 780 – 870 mm with a majority being females with ripe ovaries.

(Reported by Demersal Fisheries Division)



Etelis coruscans landed at Cochin Fisheries Harbour

CMFRI suggests guidelines in National Plan of Action for the conservation and management of sharks in India

In a new book entitled "Guidance on National Plan of Action for Sharks in India" the status of India's shark fisheries (including sharks, rays and skates), its trade, existing management and conservation measures etc are summarized. India's shark production being the second highest in the world, next only to

Indonesia, it is imperative that India must evolve specific strategies to manage shark fishery so as to ensure sustainability, conservation and optimum utilization. The dependence of artisanal fishing groups on shark fishing necessitates participatory shark fishing management so as to strike a balance between resource

conservation and sustenance livelihoods. Biological features peculiar to sharks, such as slow growth, long life spans coupled with late maturation and slow turnover of generations make many species extremely vulnerable to fishing with very limited opportunities for stock recovery. The high amount of

biological variability among different shark species makes management difficult and calls for species-specific measures, taking into account habitat and fishing gear variability. Broadly following the guidelines of FAO's International Plan of Action-Sharks the book outlines a theme-based action plan for shark conservation and management in India. It also provides the baseline information required for comparative studies on the status of shark fishery and stocks that will have

to be done periodically after implementation of the proposed NPOA for sharks in India. This book is an initiative of the Demersal Fisheries Division of CMFRI which is currently running an in-house national project "Assessment of Elasmobranch resources in the Indian Seas" and a Ministry of Earth Sciences (MoES) funded project on "Resource assessment and Barcoding of Elasmobranchs".

(Reported by Demersal Fisheries Division)



Indigenous recirculation facility for the marine ornamental fish broodstock tanks

An indigenous recirculation facility to maintain marine ornamental fish brooders under constant photo thermal regimes and optimal water quality parameters critical to achieve the year round breeding and seed production of these fishes has been set up at the Mandapam Regional Centre. Eight pairs of marine ornamental fish brooders comprising clown fishes and damsel fishes are being maintained at 12:12 hours photo period regime and water temperature at 26°C. These fishes are fed *ad libitum* twice a day with broodstock feeds, squid and shrimp

meat. After installation of this recirculation facility the growth and reproductive behaviour was regularly monitored. It was observed that after two months the brooders started laying eggs continuously since May 2015. These eggs were incubated in separate tanks and larviculture was carried out. The simple recirculation system developed by the scientists has thus proven its efficiency.

(Reported by A. K. Abdul Nazar, R. Jayakumar, G. Tamilmani, M. Sakthivel, P. Rameshkumar, Johnson, B., Amir Kumar Samal and K. K. Anikuttan, Mandapam Regional Centre)



View of the ornamental fish broodstock tanks with chiller, biological filter and collection sump

Successful long distance transportation of crablets

The blue swimmer crab, *Portunus pelagicus* is a potential candidate species for aquaculture because it shows fast growth rates, high fecundity, and relatively short larval duration. In recent years, there is a steep decrease in their landings in the commercial fishery leading to a demand - supply gap. Berried females and males of *Portunus pelagicus* weighing 250 grams were collected from the wild and reared under captive conditions at the Mandapam Regional Centre of CMFRI. Gravid females were induced to shed the eggs by chemical stimuli. Larviculture of hatched zoea was

carried out by adopting green water technique supplemented with zooplankton of appropriate quality and quantity. 5 tonne capacity FRP tanks were used until they metamorphosed into crablets with an average carapace length of 2.5 cm. These were supplied to M/s. Vitality Aquaculture Pvt. Ltd., for rearing them in pens erected in a brackishwater pond in Uttara Kannada district, Karnataka. On 25th May 2015, crablets were successfully transported from the Mandapam Regional Centre by packing them in double layered polythene bags filled with chilled filtered sea water and medical grade

oxygen 3 times volume of seawater. The packing density was maintained as 4-5 numbers per litre. HDPE filaments were placed in the bags to provide hideout and support for the crablets during transportation. After transporting time of about 30 hours, the crablets were stocked in 4 x 2m pens erected in the one hectare pond and crablet rearing is in progress.

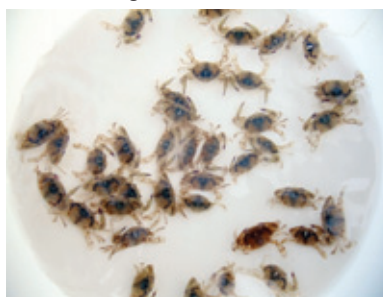
(Reported by A. K. Abdul Nazar, R. Jayakumar, G. Tamilmani, M. Sakthivel, P. Rameshkumar, B. Johnson, Amir Kumar Samal, K. K. Anikuttan and S. Chandrasekar, Mandapam Regional Centre)



View of crab hatchery



Berried crab



Crablets of *Portunus pelagicus*



Packing of crablets with hideouts provided

Participatory demonstration of sea cage farming of lobsters

The Vizhinjam Research Centre of CMFRI conducted a lobster farming trial to create awareness and interest among fishermen groups of Thirumullavaram, Kollam district, Kerala. Nearshore areas of Thirumullavaram were selected for the demonstration in a participatory mode with a group from four fishermen families. A 2m x 1m submersible cage was fabricated with GI mesh and frames coated with synthetic resins and fibre paints to reduce rusting and fouling. An inner HDPE cage net was also used for additional protection. Small lobsters (*Panulirus homarus*) collected were stocked in the cage with a stocking density of 100 numbers/m³ and were fed once daily using low value fishes. Stocking was carried out on 16th October 2014 and harvested on 20th May 2015. The average weight of the lobster which



Launching of lobster cages at Kollam, Kerala

was 72.4g at the time of stocking had increased to 198.4g in seven months period with growth rate estimated at 0.67g/day. Total 28.5 kg was

harvested with a survival rate of 70%.
(Reported by Vizhinjam RC)

Cobia and Silver pompano fingerlings transported to different parts of the country

A total of 5,000 fingerlings of Silver pompano were supplied to M/s. Vitality Aquaculture Pvt. Ltd. for farming at Karwar during the period April to June 2015. In addition 1,050 fingerlings of Silver pompano were also supplied to CIFE, Rohtak Centre. In the same period a total of 1,705 fingerlings of Cobia were supplied to Karwar Research Centre of CMFRI and 420 numbers to fish farmers in Tamil Nadu.

Expansion of Spiny lobster farming in sea cages in Gujarat

A group of young entrepreneurs from Rajkot have recently ventured to spiny lobster farming off Vadodara village near Sutrapada in active collaboration with the fishermen community their. The group fabricated a GI square cage of 4 x 5 m dimension with a net depth of 3 m which was deployed at a site identified by the scientists. The net bottom was provided with a mat and PVC pipe pieces as hideouts. Single Point Mooring system (SPM) was used for mooring the cage. Gabion filled with dead weight stones of about 2.5 tonnes connected with 12 mm alloy chain of 35 m was used in mooring line preparation. A stockless anchor was also given as additional protection. Cage was installed on 23rd February, 2015 and immediately 300 baby lobsters each weighing 80 - 100 grams, brought from Mahuva coast were stocked. They were fed with trash



GI Square cages for open sea lobster culture being readied

fish twice a day @ 10% body weight. On 28th May, 2015 the lobsters were harvested due to prevalence of rough sea conditions with the onset of monsoon. 65 kg of lobsters was harvested with an average weight of 217g each and the group earned a revenue of ₹ 78,000. This has instilled

confidence in these entrepreneurs and they are all set for taking up the venture on a higher scale during the next season.

(Reported by Divu, D., Mohammed Koya K., Gyanaranjan Dash, Sreenath K. R., Vinaya Kumar Vase, Swatipriyanka Sen Dash, Suresh Kumar Mojjada, and Mahendra Kumar Fofandi, Veraval RC)

Whale shark washed ashore at Ratnagiri

A whale shark (*Rhincodon typus*) measuring 6 m and weighing approximately 1.5 tonnes was accidentally caught by a purse seine unit off Ratnagiri coast on 30th May, 2015. The fishermen were aware of the fact that this is an endangered species whose hunting and trade is prohibited. Therefore they allowed it to escape in live condition to the sea but unfortunately after a few hours it died and was washed ashore at Sakharinate. In India, the species is protected under Schedule 1 of the Wildlife (Protection) Act, 1972.

(Reported by Dr. G. B. Purushottama and David D. Sawant, Mumbai RC)



Whale shark washed ashore at Sakharinate, Ratnagiri

Blue whale stranded at Raigad

On 24th June 2015, a whale was found to be in distress condition near Revdanda fort, Raigad district and local fishers contacted Forest Department which initiated a rescue operation. According to information

collected from local fishers this was unsuccessful due to the shallow nature of the beach at the spot and the whale died in the early morning of 25th June 2015. Identified as a blue whale, *Balaenoptera musculus* it was

approximately 40 feet long and weighing around 20 tonnes. The carcass was pulled ashore using three JCB machines and with the help of local fishers on beach. After tissue samples were collected by officials of Forest Department for further analysis the carcass was buried on beach on 25th June 2015. Visiting CMFRI team found that on 27th June 2015 the buried whale carcass emerged out and was emanating foul smell. The concerned Forest, Health and Police officials decided to burn the carcass with local fishers, public and others extending full cooperation to authorities during the whole incident.

(Reported by Dr. V. V. Singh, S. Ramkumar, J. D. Sarang, B. N. Katkar, K. R. Mainkar, P. A. Khandagale, V. D. Mhatre and S. R. Bhangare, Mumbai RC)



Blue whale in distress at Raigad

Baleen whale stranding at Mandapam

A Baleen whale was found stranded near INP jetty at Mandapam on 24th April 2015. The male whale measured 19.3 m in total length and weighed approximately 18 t. 52 numbers of baleen plates (26 on either side) were observed. Morphometric measurements were recorded of the stranded whale.

(Reported by A. K. Abdul Nazar, R. Jayakumar, G. Tamilmani, Johnson, B., N. Ramamoorthy, Mandapam Regional Centre)



Stranded Baleen whale at Mandapam

Litter contamination in the fishing grounds

A survey conducted along Thoothukudi coast to assess the litter contamination in the various fishing grounds indicated that the litter is mainly observed in gears operated in the shallow waters like bottom set gillnet and trawler locally called *Thallumadi* and hardly seen in gears operating in deeper areas. The litter contamination was higher during the

post monsoon period especially in January - February months. Maximum density of 247.2g/gear occurred in the bottom set gillnet collections at Kayalpatinam followed by 105.3g/gear in *Thallumadi* at Mottaigopuram and the least value of 24.9g/gear in the bottom set gillnet collection at Karapad Bay. Among the litter components, group B litter

comprising plastic bags and sachets were the dominant constituents followed by group A litter consisting of fish net pieces and nylon ropes. The microplastic contamination evaluated indicated that the frequency of occurrence was highest at 5 m depth and was rare at 20 m depth.

(Reported by Fishery Environment and Management Division, Tuticorin RC)

Marine copepod culture initiated



Stock culture of copepods

Culture of selected marine copepod as live feed for larviculture operations has been initiated at Tuticorin RC. Calanoid copepods such as *Acartia spinicauda*, *Temora turbinata*, *Pseudodiaptomus serricaudatus* and the cyclopod copepod *Oithona* spp. is being cultured in 3 phases such as stock culture, intermediate culture and mass culture.

(Reported by C. Kalidas,
S. Sekar V. Rayer, Dr. P. P. Manojkumar,
L. Ranjith and M. Kavitha)

Ectosymbiont crab recorded on the venomous Flower sea urchin

Fourteen numbers of parthenopid crab *Zebrida adamsii* were found to be associated with the toxic sea urchin *Toxopneustes pileolus*, which was collected from the bottom set gillnet operated in Gulf of Mannar. *Z. adamsii* is a solitary crab and most of

the crabs found in association with the sea urchin had a carapace width of around 1 cm. Its obligate association with sea urchins is not yet fully understood.

(Reported by R. Saravanan,
I. Syed Sadiq and N. Ramamoorthy,
Mandapam Regional Centre)



Successful natural spawning of orange spotted grouper in captivity

Successful spawning of orange spotted grouper *Epinephelus coioides* occurred in indigenously developed recirculatory tanks of 100 t capacity. Natural spawning occurred without the use of any hormones/chemicals over a period of 3-4 days in batches, with total number of eggs released per spawning ranging from 3 to 4 lakhs.

(Reported by Visakhapatnam Regional Centre)

Captive rearing experiments with Indian salmon

In an attempt at captive rearing and breeding of Indian Salmon, *Eleutheronema tetradactylum* (Shaw, 1804) wild fry of the species collected from the estuarine waters of Nagayalanka, Andhra Pradesh were initially stocked in happas in local ponds. These were transported to the mariculture facility in November 2014 and nursery reared in 2000 L circular

FRP tanks. The fishes were fed daily to satiety with commercial pellets containing 50% crude protein and 6% crude fat. After 4 months of culture, they were cultured in 3000 L FRP tanks and fed with chopped fish @ 10-15% body weight. After seven months of culture period, they attained an average length of 168.1 ± 32.3 mm and average weight of 34.6 ± 20.9

g. For assessing their growth and also for developing broodstock, the fishes were transferred to 6 m diameter circular HDPE cage off Visakhapatnam.

(Reported by Dr. Phalguni Pattnaik,
Dr. Shubhadeep Ghosh, Mr. M. Murali
Mohan, Mr. P. R. Behera and Dr. Biswajit
Dash, Visakhapatnam Regional Centre)

Bumper harvest of Sea bass from estuarine cages in Karnataka



Sea bass harvest from cages kept in estuaries

More and more fishers are coming forward to adopt small scale cage culture technology introduced in 2009 and modified over the years by Mangalore Research Centre. One such small scale backyard model cages of 6 x 2 x 2 m stocked with 500 fingerlings of Sea bass and Red snapper of 5-6 g and reared for 20 months was harvested in May, 2015. The average weight of the fish was about 3 kg, and 1.5 t of fish was harvested from the cage and sold at a rate of ₹ 400 per kg.

(Reported by Mangalore RC)

Oyster harvest and marketing

Farmed edible oyster, *Crassostrea madrasensis* was harvested at Moothakunnam and Puthenvelikkara (Ernakulam District) in June 2015. About 10 farms with 350-400 strings

each were harvested and depurated in the Moothakunnam Value Added Production (VAP) unit. Total harvest was about 17 tons shell-on. Depurated, steamed oyster meat is

being sold through the fish sale outlet of NIFPHATT in Kochi and the Wild Fish outlet of Abad group, Kochi.

(Reported by Molluscan Fisheries Division)



Oyster harvest in progress



Oysters being processed at the VAP unit



Processed oyster meat

Oyster farming demonstration in Sindhudurg

CMFRI successfully demonstrated oyster farming in a farm at Wadatar, Sindhudurg District of Maharashtra with support from the UNDP/GEF funded project "Demonstration of bivalve farming at Sindhudurg District in the state of Maharashtra". The training and demonstration of oyster farming was given to the self-help group, "Prasidhi" consisting of 10 members. After 15 months, about 500 strings containing 7000 numbers of oysters were harvested in June 2015. Each string consisted of 10-15 live oysters whose meat content was high at 11-12 % and sold at the rate of ₹ 150-200 per dozen. About 50% of the total production was sold as live oyster and a total revenue of ₹ 50,000 was obtained. Apart from this, sale of the meat of smaller sized oyster contributed ₹ 15,000. The overall cost



Report of the successful oyster harvest in Sindhudurg covered in local newspaper

of production was an estimated ₹ 20,000 thus earning a profit of ₹ 45,000.

(Reported by Asokan, P. K., Mohamed K. S., Vidya, R. and Jestin Joy K. M., Molluscan Fisheries Division)

Director General, ICAR visits Visakhapatnam Regional Centre

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR visited the Visakhapatnam Regional Centre on 9th May 2015. He visited the laboratories, mariculture hatchery, broodstock holding facility and reviewed the post-cyclone *HudHud* reclamation works carried out. Dr. Shubhadeep Ghosh, Scientist-In-Charge briefed about on-going research activities such as Grouper larval rearing, Indian salmon captive rearing and land-based broodstock rearing facility for grouper and Indian Pompano. Later DG addressed a joint meeting of the CMFRI and CIFT staff at Visakhapatnam.



Dr. S. Ayyappan, DG viewing the Indian salmon larviculture progressing in the mariculture hatchery

Joint Secretary, DAHDF visits CMFRI

Mr. Aditya Kumar Joshi, Joint Secretary (Fisheries), Department of Animal Husbandry, Dairying and Fisheries (DAHDF) visited HQ on 15th June 2015. Shri. Premchand, Director-General (I/C), Fishery Survey of India (FSI), Dr. G. Mohana Pai, Asst. Commissioner (Fisheries), DAHDF and Dr. P. R. Meshram, Director (Fishery Statistics), DAHDF were also present. Dr. A. Gopalakrishnan, Director, briefed about the mandate and research activities of CMFRI and various activities conducted jointly with DAHDF. Three presentations on "Marine Fisheries Census", "Sea cage farming" and "Guidance on NPOA for Sharks in India", were made during the meeting by Dr. T. V. Sathianandan, Head, Fishery Resources Assessment



Book release by Joint Secretary, DAHDF

Division, Dr. K. K. Philipose, Scientist-in-Charge, Karwar Research Centre and Dr. P. U. Zacharia, Head, Demersal Fisheries Division respectively. In the meeting it was decided to conduct Marine Fisheries Census 2015 by CMFRI with the financial support from DAHDF, during December 2015. On the occasion

the CMFRI publication entitled "Guidance on National Plan of Action for Sharks in India" prepared by the Demersal Fisheries Division was released by the Joint Secretary. Dr. R. Narayanakumar, Head, Socio Economic Evaluation and Technology Transfer Division proposed the vote of thanks.

Announcement

CMFRI is organising a **"National Workshop on Effective Management of E- Resources in Research Libraries"**. It will be held from 12th October, 2015 to 17th October, 2015 at CMFRI Headquarters, Kochi. Topics such as "eprints@cmfri", Open Source Repository Software "DSpace", Modern trends in managing Digital Libraries, capacity building in Digital Age, Barcode Technology RFID, Anti Plagiarism for research, E-Book Publishing and Copy editing are included. Application along with a Demand Draft for ₹ 5000 as registration fee is to be sent to Smt. P. Geetha, Workshop Co-ordinator & Officer-in-charge, Library & Documentation Centre, ICAR-Central Marine Fisheries Research Institute, Post Box No. 1603, Ernakulam North P.O., Kochi - 682018, Kerala. The last date for the receipt of applications is 30th September 2015. Details are available at www.cmfri.org.in

FAO BOBLME workshop held

The final workshop on FAO-BOBLME funded Projects "An evaluation of the current conservation measures on sea cucumber stocks in Palk Bay and Gulf of Mannar of India" and "Participatory management for conservation of seahorses in the Gulf of Mannar south-east coast of India" was conducted on 30th June, 2015 at Tuticorin RC of CMFRI. Dr. P. P. Manojkumar, Scientist In-charge, welcomed the gathering. The workshop was inaugurated by Dr. P. S. B. R. James, former Director, CMFRI who delivered the presidential address.

Felicitations were offered by Mr. C. M. Muralidharan, Project



Inaugural address by Dr. P.S.B.R. James, former Director, CMFRI

Manager, BOBLME, Dr. Dange, IFS, Director, GOMBRT and Dr. K. K. Joshi, Head, Marine Biodiversity Division, CMFRI. Dr. E. Vivekanandan, Principal Scientist, (Retd.), CMFRI and Senior Advisor of the Projects gave an overview of the project. The brief summary of the project findings on seahorse and sea cucumber was presented by Dr. K. Vinod and Dr. P. S. Asha respectively.

The major findings of stakeholders survey was presented by Dr. B. Johnson. Dr. D. B. James delivered a lecture on conservation of sea cucumbers and Dr. A. P. Lipton on conservation of sea horses in India. Mr. Issac Jayakumar, Assistant Director of Fisheries, Thoothukudi explained the challenges and opportunities in conservation of endangered species. Mr. T. P. Pradeep, Inspector, WCCB made a presentation on role of Wildlife Crime Control Bureau (WCCB) in Gulf of Mannar. The plenary session was attended by representatives from BOBLME, Tamil Nadu Fisheries Department, WCCB, Gulf of Mannar Biosphere Reserve Trust (GOMBRT), CMFRI, International Collective in Support of Fisher workers (ICSF), State universities and fishermen.



Participants of the workshop

International training course on Harmful Algal Blooms (HAB)

NF-POGO Alumni Network for Oceans (NANO) International Training course on "Basic sampling protocols for HAB studies: taxonomy and toxin" as part of the NANO regional project "Study of Harmful Algal Blooms and other aspects of Sardine Habitats around the Indian Sub-continent (SHABASHI)" was organized by Nansen Environmental Research Centre India (NERCI) in association with CMFRI at Mandapam Regional Centre during 12th-15th May 2015. The training programme was inaugurated by Dr. A. K. Abdul Nazar, Scientist-in-Charge & Organizing Secretary. Dr. Nandini Menon, Scientist, NERCI and Patron of the training programme delivered felicitations. Dr. Grinson George proposed vote of thanks.

Dr. Kanthi K. A. S. Yapa, University of Ruhuna, Sri Lanka, Dr. Gunjan

Motwani, SAC-ISRO, Ahmedabad, Ms. P. Minu, CIFT and Mr. S. S. Shaju, NERCI were resource persons for the training programme. The participants were given training in sampling, preservation, processing and analyses involved for studying harmful algal blooms and phytoplankton identification. The Solid phase adsorption toxin tracking (SPATT) procedures, bio-optical methods for pigments and colored dissolved organic matters for harmful algal

bloom studies and hands on training in High Performance Liquid Chromatography (HPLC) for quantitative estimation of pigments from water samples was given. Community structure determination through computational algorithms and aspects of chemical taxonomy were discussed. The valedictory function was held on 15th May, 2015.

(Reported by Mandapam Regional Centre)



Participants of the Training course on HAB

Trainers' Training Workshop

An Interactive Trainers' Training Workshop "Moving towards sustainable fisheries" was conducted during 20th-22nd May as a CMFRI-MPEDA-NETFISH joint initiative. This programme was the first of a series of countrywide capacity building programmes. Dr. K. Vijayakumaran coordinated the programme in which 24 participants, mainly representing NETFISH and MPEDA from all over the country and four scientists from CMFRI participated. Dr. A. Gopalakrishnan, Director, CMFRI inaugurated the training workshop on 20th May. Topics included approaches to fisheries management, economics and sustainability of fishing, legal and regulatory environment, sustainable post-harvest utilization, low energy fishing, safety and security at sea etc. Participants played a set of resource exploitation games and generated ideas and action programmes for grassroot level interventions. On 22nd May, Smt. Asha C. P., Joint Director, MPEDA chaired the valedictory session and distributed certificates to the participants.



Dr. A. Gopalakrishnan, Director inaugurates workshop



Participants of the workshop

CMFRI hosts the sixth "National Mission on Conservation of Sharks-India"

The 6th Meeting of the National Mission on Conservation of Sharks-India (NMCSI), initiated by the Association of Deep Sea Going

Artisanal Fishermen (ADSGAF) based at Thuthoor, Kanyakumari District of Tamil Nadu was held at Veraval Regional Centre on 17th June, 2015.

The meeting was attended by 63 participants belonging to fishermen associations, Government Departments and NGOs. The inaugural session was presided by Mr. Shyamal Tikadar, IFS, Chief Conservator of Forests, Marine National Park, Jamnagar. Ms. Chemudupati Samyukta, Campaign Manager -Wildlife, Humane Society of India described the purpose of the NMCSI and the series of meetings being conducted. Other dignitaries such as Dr. E. Vivekanandan, Principal Scientist, (Rtd.), CMFRI, Shri. Sumit Rawat, Commanding Officer, Indian Coast Guard Station, Veraval and Dr. K. L. Mathew, Professor, College of Fisheries, Veraval also spoke on the occasion which was followed by two technical sessions.



NMCSI workshop in progress

In the first Technical Session chaired by Dr. E. Vivekanandan presentations were made by Ms. Swatipriyanka Sen Dash, Scientist, CMFRI, Representative of ADSEAF and K. Mohammed Koya, Scientist in

Charge, CMFRI Regional Centre, Veraval. The second session comprised of Group Discussions on means to Improve data collection and research, existing conservation and management measures and the way

forward. The meeting concluded with vote of thanks proposed by Mr. J. Vincent Jain, core team member-NMCSI.

(Reported by: Veraval Regional Centre)

NFDB sponsored training on marine ornamental fish culture



Dr. A. K. Abdul Nazar, Scientist-in-Charge interacting with the fisherfolk

More than 120 fisherfolk belonging to various Self Help Groups (SHGs) visited the Mandapam Regional Centre on 11th, 12th and 27th June 2015 under the NFDB sponsored training on "Marine Ornamental Fish Production, Rearing and Marketing" organised by the State Fisheries Department, Ramanathapuram, Mandapam. Dr. R. Jayakumar, Senior Scientist coordinated the programme at the centre and scientists of the centre gave lectures on various techniques of broodstock development, breeding, larviculture, live feed culture, nursery rearing, water quality and health management in marine ornamental fishes.

Stakeholders workshop held under GULLS

The Belmont Forum funded GULLS (Global Understanding and Learning for Local solution: Reducing vulnerability of marine dependent coastal communities) project is being implemented in Elamkunnappuzha village, to study the vulnerability and assess the awareness of the fishers towards climate change. The project focuses on identifying the numerous adaptation and mitigation strategies to implement the Project activities under the CREVAMP (Climate Resilient Village Adaptation and Mitigation Plan) framework. The project Inception and Awareness Workshop was held at Elamkunnappuzha on 22nd April, 2015 in collaboration with the Grama panchayat. The 200 odd registered participants included fisherfolk across different sectors as well as leaders

representing various self-help groups, fisherwomen and farm women, local self-government officials, elected ward representatives of Elamkunnappuzha Panchayat besides project staff. The formal inauguration of the workshop was done by Smt. Beatrice Joseph, President, Elamkunnappuzha Gram Panchayat followed by technical

sessions. The event gave a potent platform for strengthening the rapport between CMFRI and Elamkunnappuzha Panchayat, which would ideally lead to a live lab for community based climate change research.

(Reported by Dr. Shyam S. Salim, SEETT Division and Research Co-ordinator, GULLS).



Inauguration of the GULLS workshop at Elamkunnappuzha

The Mangalore Research Centre celebrated the World Environment Day on 6th June, 2015 by planting of fruit saplings in the office premises by the staff members. The World Ocean Day on 8th June, 2015 was celebrated by cleaning the premises of the Mangalore Fisheries Harbour.

Industrial Work Experience programme on seacage farming

The Veraval Regional Center of CMFRI imparted specialized training on seacage farming for the 2nd batch of students of Diploma in Fisheries Engineering course of the Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth. The six months long training (3rd December, 2014 to 3rd May, 2015) for four final year students on a residential mode comprised of lectures, practical sessions and hands on training in the field. The trainee students had opportunities to become involved in all the cage farming related research activities like monitoring of growth, environmental parameters, maintenance of experimental fishes in the wet laboratory, seed packing and transportation etc. Evaluation at the end of the training was on criteria set by the University. This mode of training



Monitoring of growth in lobsters at cage site by students

is expected to build up technically qualified manpower for the rapidly developing seacage farming industry in the country.

User Awareness programme on J-Gate

The Library & Documentation Centre organized a User Awareness Programme on J-Gate @CeRA, on 7th April 2014 at Kochi. Mr. Ravishankar, Training Consultant, Informatics India Ltd., Bangalore, gave a detailed demonstration on J-Gate resources including tips on how to access e-journals through J-Gate online, Basic and Advanced search methods, use of Boolean operators etc and concluded with an interaction session. The program was attended by more than 60 Researchers.



J-Gate training in progress

Training programme on "Scientific writing"

A training programme on "Scientific writing" and "Ecosystem approaches to Fisheries Management" was conducted at Veraval Regional Center on 18th June, 2015. Twenty participants from ICAR-CMFRI, ICAR-CIFT and College of Fisheries, Junagadh Agriculture University, Veraval attended the training. Dr. E. Vivekanadan, Principal Scientist (Retd.) CMFRI as Expert identified by the Food and Agriculture Organisation (FAO) for the region was the trainer.

Awards

Ms. K. N. Saleela, Scientist, Crustacean Fisheries Division was awarded Ph.D by the Centre for Marine Science and Technology, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu for her thesis entitled "Nutritional studies on the spiny lobster *Panulirus homarus* from the southwest coast of India" in March 2015.

The team comprising Dr. G. Maheswarudu, Rajkumar U., Miriam Paul Sreeram, Chakravarty, M. S. and Sajeev, C. K. was awarded with World Endocrinology Research Award 2015 for their paper entitled "Effect of Testosterone Hormone on performance of male broodstock of Black Tiger shrimp *Penaeus monodon fabricius*, 1798" that appeared in *Photon The Journal of Veterinary Science*, 116, 446-456 (2015).

Hindi Workshops

A Spoken Hindi Workshop was organized at Headquarters on 16th and 17th June, 2015. Smt. Leena T. P., Hindi Translator, Fisheries Survey of India, Kochi conducted the class. Total 25 officers and staff including Scientific, Technical and Administrative categories attended the class.

Spoken Hindi Workshop for the staff was also conducted on 27th June, 2015 at Mandapam Regional Centre.



Spoken Hindi workshop at HQ

TOLIC Meeting

- Shri. Rakesh Kumar, Chief Administrative Officer inspected the Official Language activities of Madras Research Centre of CMFRI, Chennai on 6th June, 2015.
- Shri. Rakesh Kumar, Chief Administrative Officer and staff of Hindi Section attended the meeting of Town Official Language Implementation Committee held on 28th May, 2015 at Income Tax Office, Kochi.

The quarterly meeting of Official Language Implementation Committee of the Institute was held on 30th June, 2015 under the chairmanship of Dr. A. Gopalakrishnan, Director, CMFRI. Official Language activities for the quarter April- June, 2015 were reviewed and decisions were taken for further improvement.

Recreation Club activities

- Hands on training on tailoring was provided to the staff family members of Mandapam Regional Centre during 7th January to 7th May, 2015. A total of 12 members were benefitted through this programme.
- Introduction class on Yoga was given to staff members of Mandapam Regional Centre on 7th July, 2015 by the ISHA Foundation.



Training in Tailoring

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Kochi - 682 018

International Impact Factor 0.195
NAAS rating 6.2

CMFRI wins ICAR South Zone Sports Championship Trophy - 2015

CMFRI bagged the ICAR South Zone Sports Championship Trophy with 71 points in the sports event hosted by CIFT at Kochi from 25th to 29th May, 2015. There were 613 participants including 56 women from 23 Institutes at the event. The Badminton



CMFRI's ICAR South Zone sports meet contingent 2015

and Basketball championship was won by CMFRI while Mr. Paulose

Jacob Peter won the individual Best Athlete trophy.



Mr. Paulose J. P. receives trophy for the best athlete



Winners of Basketball event with Dr. Kripa V., Chairman, Sports Committee

Event	Name of staff	Position
Shot put	Mr. Shoji Joy Edison	First
Javelin throw	Mr. A. K. Shaji	First
800 m race	Mr. Mithun Raj. N. K.	First
Cycling	Mr K. G. Jayaprasad	First
100m race	Mr. Paulose Jacob Peter	First
Discus throw	Mr. Sukhdhane Kapil	Second
1500 m race	Mr. Mithun Raj N. K.	Second
200 m race	Mr. Paulose Jacob Peter	Second
Long jump	Mr. Paulose Jacob Peter	Second
High Jump	Ms. Smitha	Second
Javelin throw	Ms. Smitha	Second
4 x 100 m Relay	Mr. Paulose Jacob Peter Mr. Shoji Joy Edison Mr. Joseph Mathew, Mr. Jishnudev	Second
400 m race	Mr. Shoji Joy Edison	Third
Javelin throw	Mr Shoji Joy Edison	Third
Shot put	Ms. Remya	Third
Badminton (Men)	Mr. Jayakanthan C. Dr. Shyam S. Salim, Mr. A. K. Shaji Mr. Joseph Mathew, Mr. V. Rajendran	First
Basketball	Mr. Joseph Mathew, Dr. Shyam Salim Mr. A. T. Sunil, Mr. A. K. Shaji Mr. Shoji Joy Edison, Mr. Sukhdhane Kapil Mr. K. G. Jayaprasad, Mr. V. Rajendran Mr. Mohamed Koya	First

Cycling Champion makes CMFRI proud

S hri. K. G. Jayaprasad, Skilled Supporting Staff, Mariculture Division, CMFRI, Kochi who has won the championship in Cycling at ICAR zonal and inter-zonal events several times has now got international recognition. He has won medals in the 200, 300, 400 and 600 km cycling competitions conducted by Audax Club Parisien (France) International Cycling Club through Cochin Bikers Club during the period December 2014 to May 2015. The final 600 km route from Kaloor, Kochi to Kanyakumari and back through NH 47 was completed in 37 hours and 15 minute which was 2 hours and 45 minutes ahead of the stipulated time. He has now received an invitation to participate in cycling competitions organized in Europe. Mr. Jayaprasad who cycles daily to the office from his home and practices by peddling 60 km before sports events can also be considered as a Climate Change Ambassador promoting environment friendly and healthy options of travelling.



CMFRI-KVK-NICRA Initiative on Integrated Fish Farming in Pokkali fields

The naturally organic farming system practiced in the coastal areas of Ernakulam district known as *Pokkali* farming involves alternate growing of paddy and shrimp in the same field. The main income which came from shrimp was recently jeopardized due to occurrence of White Spot Syndrome Virus (WSSV)



KVK team at the fish harvest site



Harvest of pearlspot from Pokkali fields

infection in the shrimps. Labour shortage, high wages, lack of machinery, lack of branding to *Pokkali* products etc. accelerated the crisis leading to the once popular farming system being abandoned. To attract farmers back to *Pokkali* farming by

ensuring more income per unit area by integrating fish farming was therefore demonstrated in selected *Pokkali* fields of Kadamakkudy, Pizhala, Ezhikkara, Nayarambalam and Kumbalanghi villages under Technology Demonstration

Programmes of National Innovations on Climate Resilient Agriculture (NICRA) project operated by CMFRI during last three years. Whereas paddy-shrimp farming gives an income of ₹ 50,000 per hectare (ha), in this unique method, fish alone can contribute profit of ₹ 80,000 per ha. Pearlspot, mullet and seabass are suitable for integrated fish farming of which the first two can be grown in the open field. Sea bass being carnivorous requires confined farming in cages positioned in channels and sluice pits in the field. Subsequent to the success of this three component integrated farming, the Fish Farmers Development Agency (FFDA), Government of Kerala also has extended financial support for the venture where individual farmers or Padasekhara Samithis can apply. A total of 100 ha open fields and 50 cage units, each comprising 2 cages are eligible for a financial assistance of ₹ 8000 per cage unit and ₹ 20,000 per ha open field from the FFDA.



Sea bass harvest



Public participation at the auctioning of fish harvest

- **Dr. A. Gopalakrishnan**, Director. As invited speaker at "Cryobiotech Asia 2015 - International Conference on Low Temperature Science and Biotechnological Advances" presented a paper in the session on "Aquatic species preservation" on 27th April, 2015 at NASC Complex, Pusa Campus, New Delhi.

Attended the 6th meeting of the Scientific Panel for Fish and Fisheries Products at FDA Bhavan, New Delhi held on 7th May, 2015.

Attended the meeting of the Fisheries Science Division chaired by DDG (Fy) and the meeting of the Vice Chancellors of Agricultural Universities and the Directors of ICAR Institutes from 14th to 16th May, 2015 at New Delhi.

Visited Vizhinjam Research Centre of CMFRI on 29th May, 2015 and reviewed the research and other activities of the Centre.

Attended the Advisory Committee meeting of Zoological Survey of India at Kolkata on 10th June, 2015.

- **Dr. K. S. Mohamed**, Head, Molluscan Fisheries Division, participated in the Focused Mentoring meeting on GIZ projects for selected case studies at the Bay Bengal Programme Office, Chennai on 10th April 2015.

Participated in meeting with Director of Fisheries, (Kerala) regarding Ashtamudi Clam Council held at Fisheries

Directorate Office, Thiruvananthapuram on 7th May 2015.

Attended the Awareness Campaign for Traditional Fishers on 27th June 2015 at Vypeen, Kochi.

- **Dr. P. U. Zacharia**, Head, Demersal Fisheries Division delivered talk on the topic 'An overview of the Marine Fisheries in India' for the Trainers Training Workshop entitled jointly organized by CMFRI and NETFISH-MPEDA on 20th May 2015 at CMFRI, Kochi.
- **Dr. Veerendra Veer Singh**, Scientist-in-Charge, Mumbai RC. attended sixteenth meeting of the Consultative Committee of the Fisheries Survey of India held on 30th March 2015.
- **Dr. Prathibha Rohit**, Scientist-in-Charge, Mangalore RC. attended the TOLIC meeting organized at Corporation Bank Head Office on 28th May, 2015.
- **Dr. Veerendra Veer Singh**, Principal Scientist, **Dr. G. B. Purushottama**, Scientist, **Dr. Nilesh Pawar**, Senior Technical Officer and **Mr. P. A. Khandagle**, Technical Assistant attended the MTSU-WB Stakeholders Consultation Meet for two studies entitled "Study of socio-economic outcomes due to land reclamation in development projects implemented between 1970-2011", and "The study of Institutional strengthening for sustainable reforms in urban planning and development control Management", at



Dr. A. Gopalakrishnan, Director delivered a talk during the Silver Jubilee Celebrations at the National Academy of Agricultural Sciences, New Delhi.

Rachana Sansad College of Architecture, Prabhadevi on 12th June, 2015.

- **Dr. B. Johnson**, Scientist participated as Member Advisory Council for "Conservation and management of coastal and marine resources of Palk Bay" organized by DHAN Foundation on 4th June 2015.
- **Dr. Gynaranjan Dash** and **Mrs. Swatipriyanka Sen Dash** (Scientists), participated in World Ocean Day celebrations organised by NETFISH-MPEDA, Veraval at Mangrol, on 8th June, 2015.

Dr. Veerendra Veer Singh, Scientist-in-charge, Mumbai RC of CMFRI was nominated as Member of the District Advisory Committee meetings held at Thane, Sindhudurg, Ratnagiri, Palghar and Mumbai, organized by Department of Fisheries, Maharashtra to confer opinion on the Purses seine Committee recommendations, Duration of the fishing ban, Deep sea fishing policy and other fisheries related issues of Maharashtra.

Human Resources Development

Workshop/Training/Conference etc	Date and Venue	Participants
FAO-NACA Regional Workshop "Documentation and dissemination of successful practices of sustainable intensification of aquaculture in Asia-Pacific"	16 th –18 th June 2015, Bangkok, Thailand	Dr. K. S. Mohamed , Principal Scientist
National Seminar on "Marine biodiversity and management of coastal ecosystems"	8 th - 9 th April, 2015, Department of Marine Living Resources, Andhra University	Dr. Shubhadeep Ghosh , Senior Scientist
Focussed Group Discussion held under the project "Economic valuation of Seasonal Fishing Ban in the selected maritime States of India" funded by TEEB India Initiative (GIZ-India)	BOBP office, Chennai 10 th April, 2015	Dr. R. Narayanakumar , Principal Scientist

SATTUNA Project Review meeting	27 th April, Indian National Centre for Ocean Information Services (INCOIS) Hyderabad	Mr. Suresh Pilli , Technical Assistant
22 nd Institute Research Council Meeting	28 th April 2015 to 2 nd May 2015 ICAR-CMFRI, Kochi	All scientists
NANO-International training course on "Basic Sampling Protocols for Harmful Algal Blooms (HAB) Studies: Taxonomy and Toxin"	12 th to 16 th May 2015, Mandapam Regional Centre of CMFRI	Dr. I. Rajendran, Dr. Grinson George (Senior Scientists) Mr. Loveson Edward, Dr. Amir Kumar Samal (Scientists) Mr. Ravi K. Avdhanulah (Tech. Asst.)
Workshop on "Mainstreaming coastal and marine biodiversity conservation into production sectors" conducted by the EGREE Foundation	25 th May 2015, Rajahmundry	Ms. M. Muktha Dr. Sekar Mekarajan (Scientists)
BOBLME Workshop	28 th – 29 th May 2015, Chennai 31 st May to 1 st June, 2015 Visakhapatnam	Dr. K. S. Mohamed, Dr. P. U. Zacharia (Principal Scientists)
International Training Course "An introduction to the Blue Ocean"	1 st – 12 th June 2015, Indian National Centre for Ocean Information Services (INCOIS), Hyderabad	Dr. V. Venkatesan , Scientist
Workshop on "Management of Marine Fisheries of Karnataka" organized by Secretary to Government, Department of Animal Husbandry and Fisheries, Government of Karnataka	3 rd June 2015, Secretariat Building, Bangalore, Karnataka	Dr. Prathibha Rohit , Principal Scientist
"AGRI SEARCH 2050"	18 th May, 2015. NASC complex, PUSA, New Delhi	Ms. M. Kavitha , Scientist
Interactive Trainers Training Workshop "Moving towards sustainable fisheries" jointly organized by CMFRI and NETFISH-MPEDA	20 th – 22 nd May 2015, CMFRI, Kochi	Dr. M. Vijayakumaran, Dr. V. P. Vipinkumar (Principal Scientists and Co-ordinators) Dr. S. Lakshmi Pillai , (Principal Scientist) Dr. T. M. Najmudeen Dr. Rekha Devi Chakraborty (Senior Scientists), D. Linga Prabu (Scientist)
Training Programme on "Remote sensing: An Overview for Decision Makers held during"	15 th – 18 th June, Indian Institute of Remote Sensing, Dehradun	Dr. Bindu Sulochanan , Senior Scientist
Review Meeting of Theeramythri Project (SAF)	12 th June 2015, Kochi	Dr. Shyam. S. Salim , Senior Scientist
Spoken Hindi workshop	16 to 17 th June, 2015, CMFRI, Kochi	Dr. Josileen Jose , Principal Scientist
Workshop on Crustacean Biology and Stock Assessment	22 nd – 27 th June, 2015, CMFRI, Kochi	All Scientists of Crustacean Fisheries Division
Meeting of Working Group on Ringseine Fishery	29 th to 30 th June, 2015, CMFRI, Kochi	Dr. Prathibha Rohit, Dr. M. Sivasdas, Dr. E. M. Abdussamad, (Principal Scientists); Mr. K. P Said Koya Dr. U. Ganga, Dr. Shubhadeep Ghosh, Dr. K. M. Rajesh, Dr. N. Aswathy, (Senior Scientists)
Final Workshop of FAO-BOBLME Projects	30 th June 2015, Tuticorin Research Centre of CMFRI, Thoothukudi	Dr. A. K. Abdul Nazar , Senior Scientist, Dr. B. Johnson, Dr. R. Saravanan (Scientists)

APPOINTMENTS			
Name	Designation	Centre	w.e.f
1. Mr. Sanal Ebeneazar	Scientist	CMFRI, Kochi	09.04.2015
2. Mr. Vivekanand Bharti	Scientist	CMFRI, Kochi	09.04.2015
3. Ms. Ramya Abhijith	Scientist	CMFRI, Kochi	09.04.2015
4. Ms. Remya L.	Scientist	CMFRI, Kochi	09.04.2015
5. Mr. Sukhthane Kapil Sukhadeo	Scientist	CMFRI, Kochi	09.04.2015
6. Mr. Subal Kumar Roul	Scientist	CMFRI, Kochi	10.04.2015
7. Mr. Rajesh Kumar Pradhan	Scientist	CMFRI, Kochi	10.04.2015
8. Ms. E. M. Chhandaprajnadarsini	Scientist	CMFRI, Kochi	10.04.2015
9. Mr. Rajkumar M.	Scientist	CMFRI, Kochi	10.04.2015
10. Mr. Nakhawa Ajay Dayaram	Scientist	CMFRI, Kochi	10.04.2015
11. Ms. Saloni Shivam	Scientist	CMFRI, Kochi	10.04.2015
12. Mr. S. Thirumalaiselvan	Scientist	CMFRI, Kochi	10.04.2015
13. Mr. Ansar Pokkarakath	Technician	Calicut RC	25.04.2015
14. Shri. A. Ramesh	Technician	Nagapattinam FC	25.04.2015
15. Mr. Kishor T. G.	Technician	CMFRI, Kochi	27.04.2015
16. Mr. Sreesanth L.	Technician	CMFRI, Kochi	27.04.2015
17. Mr. Abbas A. Mohammed	Technician	Kovalam FL	27.04.2015
18. Ms. Silpa P. G.	Technician	Calicut RC	28.04.2015
19. Mr. Tinto Thomas	Technician	Mandapam RC	29.04.2015
20. Mr. Sunil K.T.S	Technician	CMFRI, Kochi	01.05.2015
21. Mr. J. Balaji	Technician	Madras RC	01.05.2015
22. Mr. Anoob P. Anassery	Technician	Kovalam FL	01.05.2015
23. Mr. M. Kala Mallik	Technician	Visakhapatnam RC	01.05.2015
24. Mr. Solanki Vipulkumar Mulajibhai	Technician	Veraval RC	02.05.2015
25. Ms. Gohel Jaysree Khimji	Technician	Veraval RC	02.05.2015(AN)
26. Mr. Panchakarla Nagaraju	Technician	Visakhapatnam RC	02.05.2015
27. Mr. Rethesh T. B.	Technical Assistant	CMFRI, Kochi	05.05.2015
28. Mr. Binoy Bhaskaran	Technical Assistant	CMFRI, Kochi	06.05.2015
29. Mr. Sayooj P.	Technical Assistant	CMFRI, Kochi	06.05.2015
30. Ms. Anusree V. Nair	Technical Assistant	CMFRI, Kochi	06.05.2015
31. Mr. Bhatt Bhargav Hareshbhai	Technician	Veraval RC	06.05.2015
32. Mr. Indranil Mukherjee	Technician	Visakhapatnam RC	07.05.2015
33. Mr. Shrikrishna Pandurang Hotekar	Technician	Ratnagiri FC	07.05.2015
34. Mr. Albert Idu K. A.	Technical Assistant	Mumbai RC	08.05.2015
35. Mr. Suresh Kumar Pilli	Technical Assistant	Visakhapatnam RC	08.05.2015
36. Mr. Balla Vamsi	Technical Assistant	Visakhapatnam RC	08.05.2015
37. Ms. Vandana V.	Technical Assistant (Hindi Translator)	CMFRI, Kochi	11.05.2015
38. Mr. Praveen Narayan Dube	Technical Assistant	Mumbai RC	13.05.2015
39. Mr. Ragesh N.	Technical Assistant	CMFRI, Kochi	13.05.2015
40. Mr. Chinni Babu Bathina	Technical Assistant	Visakhapatnam RC	15.05.2015 (AN)
41. Ms. Sajeela K. A.	Technical Assistant	CMFRI, Kochi	16.05.2015
42. Mr. Rachakonda Shivaraju	Technician	Visakhapatnam RC	19.05.2015(AN)

PROMOTION			
Name & Designation	Promoted as	w.e.f	Centre
1. Dr. P. S. SwathiLekshmi, Senior Scientist	Principal Scientist	30.08.2012	Mangalore RC
2. Dr. Somy Kuriakose, Senior Scientist	Principal Scientist	23.05.2013	CMFRI, Kochi
3. Dr. Sujitha Thomas, Senior Scientist	Principal Scientist	21.06.2013	Mangalore RC
4. Dr. Geetha Sasikumar, Senior Scientist	Principal Scientist	11.07.2013	Mangalore RC
5. Dr. Joe K. Kizhakudan, Senior Scientist	Principal Scientist	21.06.2013	Madras RC
6. Dr. V. P. Vipinkumar, Senior Scientist	Principal Scientist	16.11.2013	CMFRI, Kochi
7. Dr. S. R. Krupesha Sharma, Senior Scientist	Principal Scientist	27.03.2014	Karwar RC
8. Dr. S. Lakshmi Pillai, Senior Scientist	Principal Scientist	21.06.2014	CMFRI, Kochi
9. Dr. P. T. Sarada, Senior Scientist	Principal Scientist	25.02.2015	Tuticorin RC
10. Mr. I. Mendonza Xavier Technical Officer (Draughtsman)	Senior Technical Officer (Draughtsman)	22.05.2013	Mandapam RC
11. Mr. Sijo Paul, Technical Officer	Senior Technical Officer	03.08.2013	CMFRI, Kochi
12. Dr. Jose Kingsly, Technical Officer	Senior Technical Officer	06.01.2014	Vizhinjam RC
13. Mr. K. K. Suresh, Technical Officer	Senior Technical Officer	01.02.2014	Vizhinjam RC
14. Mr. P. K. Baby, Senior Technical Assistant	Technical Officer	01.01.2014	CMFRI, Kochi
15. Mr. Bijoy Krishna Burman, Senior Technical Assistant	Technical Officer	01.07.2014	Visakhapatnam RC
16. Mr. Polara Jamnadas Premji, Senior Technical Assistant	Technical Officer	01.07.2014	Veraval RC
17. Mr. Ladani Amruthlal Arjun Bhai, Senior Technical Assistant	Technical Officer	01.07.2014	Veraval RC
18. Mr. D. G. Jadhav, Senior Technical Assistant	Technical Officer	01.07.2014	Mumbai RC
19. Mr. Suresh Krishnaro Kamble, Technical Assistant	Senior Technical Assistant	01.01.2014	Mumbai RC
20. Mr. N. K. Harshan, Technical Assistant	Senior Technical Assistant	11.01.2014	CMFRI, Kochi
21. Mr. C. G. Ulvekar, Technical Assistant	Senior Technical Assistant	27.06.2014	Karwar RC
22. Mr. S. Nandakumar Rao, Technical Assistant	Senior Technical Assistant	05.07.2014	CMFRI, Kochi
23. Mr. M. N. Sathyan, Senior Technician (Motor Driver)	Technical Assistant (Motor Driver)	01.09.2013	CMFRI, Kochi
24. Mr. K. P. Kanthan, Senior Technician	Technical Assistant	09.03.2014	Tuticorin RC
25. Mr. C. V. Jayakumar, Senior Technician (Press & Editorial)	Technical Assistant (Press & Editorial)	01.04.2014	CMFRI, Kochi
26. Mr. K. M. David, Senior Technician (Artist)	Technical Assistant(Artist)	25.05.2014	CMFRI, Kochi

27. Mr. Laxman Shankar Korabu, Senior Technician (Skin Diver)	Technical Assistant (Skin Diver)	05.06.2014	Karwar RC
28. Mr. Umesh Hari Rane, Senior Technician	Technical Assistant	22.07.2014	Mumbai RC
29. Mt. S. PrasannaKumari, Skilled Support Staff	Technician	01.06.2015	CMFRI, Kochi

TRANSFERS

Name & Designation	From	To	w.e.f
1. Mr. Upender Kumar, Assistant	Veraval RC	Mangalore RC	22.11.2014
2. Mr. A. Yesudhas, Upper Division Clerk	Tuticorin RC	CMFRI, Kochi	04.04.2015
3. Mr. G. K. Rajan, Upper Division Clerk	Mandapam RC	CMFRI, Kochi	07.04.2015
4. Ms. P. S. Sumathi, Assistant Administrative Officer	Mandapam RC	CMFRI, Kochi	20.04.2015
5. Mr. K. Jerald Raja, Upper Division Clerk	CMFRI, Kochi	Tuticorin RC	20.04.2015
6. Mr. V. Sethuraman, Senior Technical Assistant	Nagapattinam FC	CMFRI, Kochi	27.04.2015
7. Mr. V. Rajendran, Skilled Support Staff	CMFRI, Kochi	Calicut RC	01.06.2015
8. Mr. T. Rajesh Babu, Skilled Support Staff	CMFRI, Kochi	Calicut RC	01.06.2015
9. Mr. V. C. Subhash, Assistant Administrative Officer	Vizhinjam RC	Mandapam RC	08.04.2015
10. Mr. K. Krishnan, Skilled Support Staff	Mandapam RC	Tuticorin RC	19.06.2015
11. Mr. K. Anandan, Skilled Support Staff	Mandapam RC	Tuticorin RC	19.06.2015

INTER-INSTITUTIONAL TRANSFERS

Name & Designation	From	To	w.e.f
1. Ms. Karthireddy Syamala, Scientist	Mumbai RC	CIFE, Mumbai	25.04.2015 (AN)
2. Dr. P. Shinoj, Scientist	NIAEPR, Pusa, New Delhi	CMFRI, Kochi	27.04.2015
3. Mr. K. Ramaswamy, Senior Technician (Motor Driver)	NBSS & LUP, Hebbal, Bangalore	Tuticorin RC	06.06.2015
4. Dr. Suresh Babu P. P., Scientist	CIFE, Kakinada	CMFRI, Kochi Calicut RC	06.05.2015 08.06.2015
5. Dr. (Ms.) Miriam Paul Sreeram, Scientist	ICAR Headquarters	CMFRI, Kochi	22.06.2015

VOLUNTARY RETIREMENT

Name	Designation	Centre	w.e.f
1. Mr. B. Suresh Kumar	Assistant Chief Technical Officer (Farm Manager)	KVK, Narakkal	01.04.2015 (FN)
2. Mr. K. P. George	Technical Officer	CMFRI, Kochi	01.05.2015 (FN)
3. Mr. A. Ramakrishnan	Technical Officer	Mandapam RC	01.05.2015 (FN)

MEETINGS

77th meeting of the Institute Management Committee of CMFRI held on 6th May, 2015 at CMFRI, Kochi

ASSUMPTION OF CHARGE

1. Dr. P. P. Manoj Kumar, Principal Scientist took over as the Scientist-in-charge of Tuticorin Research Centre of CMFRI, Thoothukudi w.e.f 11th May, 2015.
2. Dr. M. K. Anil, Principal Scientist took over as the Scientist-in-charge of Vizhinjam Research Centre of CMFRI, Vizhinjam w.e.f 1st June, 2015.



Asian Fisheries Society (AFS)
ICAR-Central Marine Fisheries Research Institute (CMFRI) &
Asian Fisheries Society Indian Branch (AFSIB)
announce

5th International Symposium on Cage Aquaculture in Asia CAA5

November 25-28, 2015, Kochi, Kerala, India



Programme

25-27 November, 2015 : Registration and Opening of the Symposium, Technical Sessions and Trade Show

28 November, 2015 : Post-Symposium Tours

Venue

The venue for the CAA5 will be **Dream Hotel, Kadavanthra, Kochi, Kerala, India** which is located in the heart of the city. Kochi International Airport (COK) has direct flight service from Southeast Asia, the Middle East and other South Asian countries.

How to Register

Delegates can register online by following the guidelines given in the symposium website (<http://caa5.net>). However, spot registration is permitted at the venue during the symposium.

Registration Fees

Stages	International (US\$)	National (₹)
Early bird (Up to 31 July, 2015)	AFS Members : 250	AFS Members : 10,000
	Non Members : 300	Non Members : 12,000
After July 31, 2015	AFS Members : 300	AFS Members : 12,000
	Non Members : 350	Non Members : 15,000
	Students : 150	Students : 5,000
	Observers/ Companion : 150	Observers/ Companion : 5,000

Exhibition & Trade Show

The CAA5 is accompanied by an international trade show which will feature major fisheries research institutions, aquaculture related industries and their products and services.

Major Themes

- ★ **Production Systems**
 - Potential Species
 - Grow-out
 - Site
 - Harvest
 - Design and Engineering
- ★ **Breeding & Seed Production**
 - Hatchery Technology
 - Genetics
- ★ **Nutrition and Feed**
- ★ **Health and Environment Management**
- ★ **Economics, Livelihood and Policies**

Abstract Submission

Abstracts are invited under five major themes and can be submitted online. For details visit website <http://caa5.net>

Dates to Remember

Early Registration:

From 1st April, 2015 to 31st July, 2015

Submission of Abstract:

From 1st April, 2015 to 31st July, 2015

Symposium date:

From 25th to 28th November, 2015

Contact

Dr. A. Gopalakrishnan

Convener CAA5 & Director, CMFRI
Central Marine Fisheries Research Institute
P.B. No. 1603, Ernakulam North P.O.
Kochi 682 018, Kerala, India.
Telephone: +91-484-2394867
Fax: +91-484-2394909; 2396685
Email: caa5cmfri@gmail.com

Web : <http://caa5.net>

Retirements

D^{r.} Rani Mary George, Principal Scientist, and Scientist-in-Charge, Vizhinjam Research Centre of CMFRI retired from service on superannuation on 31st May 2015. She joined the Agricultural Research Service (ARS) on 5th September, 1977. She made significant research contributions in the field of taxonomy and biodiversity assessment of plankton, corals, gorgonids and ornamental fishes. She was the first Head of the newly formed Marine Biodiversity Division in CMFRI. As the Scientist-in-Charge of Vizhinjam Centre of CMFRI from 2007 till her superannuation, she played a significant role in upgrading the research facilities and other infrastructure at the centre including the development of the new Laboratory cum Office Building and Marine Research Aquarium complex. She has contributed more than 78 research papers in national/international journals and her monograph entitled *Systematic Appraisal of Hard Corals (Family Acroporidae) from the Gulf of Mannar Biosphere Reserve South-East India* found place in the UN Atlas of Oceans. She also served as Editor of *Indian Journal of Fisheries* since 2006.



D^{r.} C. S. Purushothaman, Principal Scientist retired from service on superannuation on 31st May 2015. He joined the ARS on 18th August 1978. He joined CMFRI on 8th May 2014 on transfer from ICAR-Central Institute of Fisheries Education, Mumbai where he headed the Aquatic Environment and Health Management Division. At CMFRI, he was the Scientist-in-Charge, HRD Cell.



Mr. S. Rajan
Senior Technical Assistant
30.04.2015, Madras RC



Mr. K. Muthuvel
Technical Assistant (Motor Driver)
30.04.2015, Tuticorin RC



Mr. P. Thirumilu
Senior Technical Officer
31.05.2015, Madras RC



Mr. Y. Muniyappa
Technical Officer
31.05.2015, Mangalore RC



Mr. Gopi X Chodenkar
Skilled Support Staff
31.05.2015, Karwar RC



Ms. Bhanuben L. Waghela
Skilled Support Staff
31.05.2015, Veraval RC



Mr. A. D. Sawant
Technical Officer
30.06.2015, Mumbai RC



Mr. T. Nagalingam
Senior Technician
30.06.2015, Cuddalore FC



Mr. S. Imbamani
Skilled Support Staff
30.06.2015, Madras RC



Fish Ageing Laboratory

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cadalmin

CMFRI Newsletter

Cadalmin, the CMFRI Newsletter is a quarterly publication of the Central Marine Fisheries Research Institute, Kochi. The publication gives an insight into the major events of the quarter, besides highlighting the salient findings in the research front and dissemination of technological know-how to the farming community.